

11. EXTENSION OF RANGE OF *PUNTIUS ARULIUS ARULIUS* (JERDON) IN VARIOUS STREAMS IN THUNGABADRA RIVER BASIN

Puntius arulius (Jerdon) was described from Cauvery river at Srirangapatnam (Jerdon 1849). Day (1875-78) recorded the species from Nilgiri and Wynaad hills. Shaji (1998) and Manimekalan (2000) recorded the species from various streams in Kabini and Vythiripuzha rivers (tributaries of Cauvery river). The distribution of the species was from Tamil Nadu in rivers of Cauvery drainage (Jayaram 1999). It is a rare barb having very restricted distribution and known only from Cauvery river basin. Recently, Gopi (2000) reported the occurrence of the species from Wynaad, Kottayam, Thenmalai, Kulathupuzha, and Jayaram (1999) reported it from Periyar Lake, Kerala. Occurrence of *Puntius arulius arulius* from various streams inside Kudremukh National Park, upstream of Thunga and Badra rivers (Kutch hole - 13° 12' 0.97" N, 75° 13' 48.1" E; Vimalanathi - 13° 19' 49.7" N, 75° 06' 15.7" E; Korkanhalla 13° 20' 22.3" N, 75° 10' 19.4" E and - Kummulikheri 13° 21' 31.1" N, 75° 11' 26.5" E), shows its range -extension to the other major east flowing rivers in Karnataka (Table 1).

Description: D iii 8; A iii 5; Pi 14; V i 8

Body laterally compressed, dorsal and ventral equally arched, its depth 3.2 to 3.5 times in standard length. Head small, its length 3.5 to 3.7 times in standard length. Mouth subterminal with one pair of thin maxillary barbels.

Dorsal fin inserted midway between tip of snout and base of caudal fin, its last unbranched ray non-osseous and weak. Scales moderate, lateral line complete with 21 to 24 scales, predorsal scales 8. A prominent, fairly deep pectoral pit is present. Further morphometric measurements are given in Table 1.

Colour: In life, black olivaceous-green, blending to silvery on belly with a reddish lustre; scales over lateral line with numerous tiny green spots; operculum with an iridescent green dot; three black bands on body, the transverse bars are at the level of dorsal fin origin, and the others at the level of anal fin and caudal peduncle. Pelvic and caudal fins reddish, with bright red tips.

Remarks: The occurrence of *Puntius arulius arulius* in Banatheerthem, Kil Manimuthar and Kanamparai river in Tamiraparani river basin by Johnsingh and Vickram (1987) is due to misidentification of this species with *Puntius arulius tambraparniei*. A detailed study has been carried out on the macro-, meso- and microhabitat requirements in the Gadana river basin (Sankaranarayanan 1999), the Manimuthar river basin (Johnson 1999) and the Tamiraparani river (Arunachalam 2000), and the existence of the subspecies has already been established (Jayaram 1999; Arunachalam, *et al.* 2000). Variation in phenotypic plasticity of *Puntius arulius tambraparniei*

Table 1: Morphometric measurements of *Puntius arulius arulius* in various streams of Thungabadra river basin

Proportion	Kutch hole (n=4)		Vimalanathi (n=4)		Korkanhalla (n=4)		Kummulikheri (n=1)
	Range	Mean	Range	Mean	Range	Mean	
Total length (mm)	75.3 - 109.55	88.79	63.5 - 85.19	74.94	67 - 77.15	72.5	82.75
Head length / Standard length	24.76 - 25.90	25.34	23.67 - 27.07	25.32	21.57 - 26.84	24.62	24.81
Body depth / Standard length	32.51 - 36.25	34.27	31.00 - 36.90	33.76	34.77 - 39.84	36.71	34.44
Predorsal length / Standard length	46.94 - 49.53	48.3	4.01 - 49.96	48.00	48.15 - 50.28	48.96	50.20
Post dorsal length / Standard length	54.43 - 55.83	55.2	53.63 - 57.77	55.39	53.44 - 57.92	55.28	55.00
Pectoral fin / Standard length	20.73 - 24.20	21.82	20.92 - 22.95	21.85	21.30 - 21.68	21.55	22.15
Pelvic fin / Standard length	21.67 - 24.61	23.23	21.53 - 24.19	23.12	22.62 - 23.86	23.44	22.40
Caudal fin / Standard length	28.12 - 29.31	28.64	25.25 - 29.82	27.88	22.72 - 28.0	25.94	28.23
Prepelvic length / Standard length	47.14 - 51.32	49.03	46.48 - 51.32	48.96	48.64 - 52.1	49.93	48.87
Eye diameter / Head length	7.81 - 9.25	8.54	8.07 - 9.01	8.38	7.8 - 9.94	9.06	7.50
Interorbit width / Head length	5.34 - 6.4	5.72	5.0 - 5.89	5.45	5.62 - 6.86	6.15	6.16
Snout length / Head length	13.01 - 14.96	14.32	12.84 - 15.69	13.75	13.46 - 15.76	14.49	12.44
Pectoral length / Head length	81.51 - 97.76	86.23	78.24 - 96.97	86.78	77.87 - 88.92	82.92	89.28
Pelvic fin / Head length	85.19 - 99.39	91.74	79.54 - 96.24	88.33	84.28 - 97.86	90.46	90.27
Height of caudal peduncle / Length of caudal peduncle	50.17 - 57.53	53.09	50.12 - 56.44	52.47	50.62 - 56.63	54.29	60.39
Pectoral to Pelvic fin / Pelvic to Anal fin	98.58 - 102.54	100.67	99.18 - 103.76	101.28	92.25 - 99.71	96.77	101.76

from streams, check dams, canals and wetlands in Tamiraparani river basin has already been documented (Shanthi 2002). In our ongoing project we also collected several specimens of *Puntius* sp. from Thenmalai, Kulathupuzha and Kottayam, which is closely related to *Puntius arulius arulius*, but it varies widely from *P. arulius* in several morphometric characters. Hence, the occurrence of this species (Gopi 2000) from this area needs further confirmation.

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12. NEW RECORDS AND RANGE EXTENSION OF FRESHWATER FISHES TO THE NILGIRI BIOSPHERE RESERVE, SOUTH INDIA

The Nilgiri Biosphere Reserve (NBR) is spread over the tri-junction of three states in southern India – Tamil Nadu, Kerala and Karnataka, and hence is under the joint jurisdiction of the forest departments of the three states. It is located at 10° 45'-12° 15' N and 76°-77° 15' E and has an area of 5,520 sq. km (Daniels 1993). It encompasses a complex of protected areas and reserve forests, including Nagarhole and Bandipur (Karnataka), Wynaad, the slope of Nilambur, Silent Valley and

Siruvani Hills (Kerala), and Mudumalai, Nilgiris and Mukurthi (Tamil Nadu). Of these, Bandipur, Nagarhole, Silent Valley and Mukurthi are national parks, and Mudumalai and Wynaad are wildlife sanctuaries. Bandipur is a Tiger Reserve and also the single largest protected area (874.0 sq. km) within the NBR (Anon. 1981). The annual rainfall in the area ranges from 500 to 7000 mm (Mohanan and Balakrishnan 1991) and elevation varies from 80 m (Nilambur plains) to over 2,600 m